PATENT
BASF Docket No. IN-5653
HDP No. 0906S-000332

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Group Art Unit:	1711
Examiner:	Rabon Sergent
Inventor:	Charles L. Tazzia
Serial No.	10/723,900
Filed:	November 25, 2003
For:	A Method for Making an Aqueous Coating with a Solid Crosslinking Agent

APPLICANT'S APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an appeal from the final rejection mailed November 08, 2006, for which Appellant filed a Notice of Appeal on May 4, 2007. This Brief is submitted along with the fee due under 37 C.F.R § 41.20(b)(2).

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TABLE OF AUTHORITIES

Real Party in Interest

The real party in interest is BASF Corporation, having a place of business at 26701 Telegraph Road, Southfield, Michigan 48225, to which the inventor has assigned all rights in this invention. The assignment was recorded in the United States Patent and Trademark Office on November 25, 2003, at reel/frame: 014760/0379.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

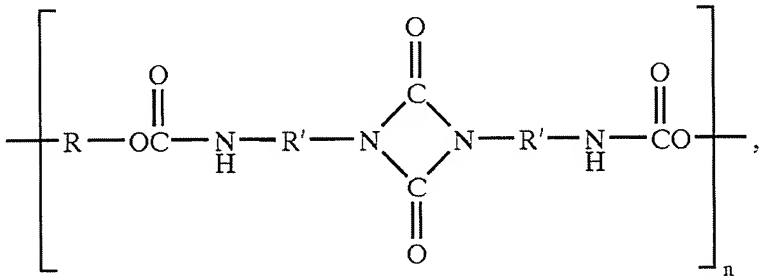
Claims 1, 3, 4, 7-9, and 11-13 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Hartung et al. (U.S. Pub. App. No. 2003/0150730) (hereinafter Hartung) in view of O'Connor et al. (U.S. Patent No. 4,496,684) (hereinafter O'Connor) or Gras et al. (U.S. Patent No. 6,479,613) (hereinafter Gras). Claims 2, 5, 6, and 10 have been cancelled. This appeal is taken as to all of the rejected claims.

Status of Amendments

There have been no amendments since the final rejection.

Summary of Claimed Subject Matter

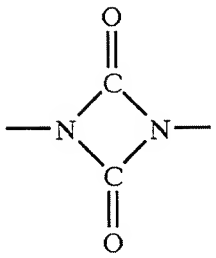
Independent claim 1 is drawn to an aqueous, electrodepositable coating composition that includes a dispersion of a cathodically electrodepositable, active hydrogen-functional epoxy resin and an uretdione compound that has a structure:



wherein R is a divalent alkylene radical, R' is a divalent alkylene, cycloalkylene, arylene, or alkylarylene radical, and n is an integer of 1 to about 50. Page 5, line 21 to page 6, line 9. The epoxy resin has a cationic functional group selected from the group consisting of quaternary ammonium, sulfonium, and phosphonium. Page 7, line 11 to page 8, line 7. The coating composition is coated onto a substrate using electrodeposition. Page 10, line 17 to page 11, line 20; and see Page 1, line 20 to page 3, line 3.

Claims 3, 4, 11, and 13 are dependent on claim 1.

An uretdione group (formed of two isocyanate groups) is shown below.



Appellant's uretdione compound also includes the additional chemical features R, R', and the ester groups, which are further repeated where n is an integer of 1 to about 50. Page 5, line 21 to page 6, line 9. As such, the uretdione compound of Appellant's claims is a particular species of the genus of uretdione compounds.

Independent claim 7 is drawn to a method of making an aqueous dispersion coating. The method includes the step of combining a solid uretdione compound with a molten, water-dispersible epoxy resin to form a homogenous resin mixture. Page 8, lines 1-4; and see the Examples. The epoxy resin again has a cationic functional group selected from the group consisting of quaternary ammonium, sulfonium, and phosphonium. Page 7, line 11 to page 8, line 7. The solid uretdione compound comprises the same structure shown above, wherein R is a divalent alkylene radical, R' is a divalent alkylene, cycloalkylene, arylene, or alkylarylene radical, and n is an integer of 1 to about 50. In addition to the combining step, the method includes the steps of salting the water-dispersible resin and dispersing the resin mixture in water.

Claim 11 is to a method of coating a substrate. The method includes the step of applying the coating composition of claim 1 to a substrate. Page 5, lines 1-3. The

applying step is followed by a curing step where the applied coating composition is cured to produce a cured coating layer on the substrate. Page 5, lines 1-3. Claim 12 is dependent on claim 11.

Grounds of Rejection to be Reviewed on Appeal

Claims 1, 3, 4, 7-9, and 11-13 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Hartung et al. (U.S. Pub. App. No. 2003/0150730) in view of O'Connor et al. (U.S. Patent No. 4,496,684) or Gras et al. (U.S. Patent No. 6,479,613).

Argument

I. **The claims are nonobvious and therefore patentable over a combination Hartung in view of O'Connor or Gras because these references and the knowledge generally available in the art lack motivation or an apparent reason to produce the present invention.**

A *prima facie* case of obviousness cannot be based on Hartung in view of O'Connor or Gras, as no motivation or apparent reason exists by which a skilled artisan would be led to use either the O'Connor polyurethane oligomer or the Gras polyaddition product in the Hartung coating composition. A requisite for establishing a *prima facie* case of obviousness is that there must be some teaching or apparent reason, either in the reference or in the knowledge generally available to those of skill in the art, which

would lead one to modify the reference(s) to produce the claimed invention. Moreover, the apparent reason to combine the references should be made explicit by the Examiner. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. ___, 2007 WL 1237837, at *14 (2007); and see *In re Kahn*, 441 F3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning to support the legal conclusion of obviousness.")

It is submitted that the reference combination and the art in general lack any motivation or apparent reason to combine the references as proposed by the Examiner. Moreover, the Examiner has failed to explicitly provide an analysis of the reasons that would have prompted a person of ordinary skill in the art to combine the cited references in the manner claimed.

In this case, the different goals and priorities of Hartung and O'Connor or Gras would not lead a skilled artisan to recreate the present invention from these references. Likewise, no reason is supplied in the rejection based on the general knowledge in the art by which a skilled artisan would combine these references in the alleged manner. Only the present invention teaches an aqueous, electrodepositable coating composition having an uretdione compound and methods of making an aqueous, electrodepositable coating composition that include a solid uretdione compound. The alleged combination of references is achieved solely based on Applicant's disclosure and the impermissible use of hindsight. *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986) (references must be viewed without the benefit of

impermissible hindsight vision afforded by the present invention); *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443, 1446 (Fed. Cir. 1992).

The primary reference of Hartung teaches many crosslinkers including epoxides and polyisocyanates. Hartung page 3, column 2, line 20 to page 4, column 1, line 9. Among many types of polyisocyanate compounds, including polyisocyanates having various blocking agents, are polyisocyanates having uretdione groups. Hartung paragraphs page 2, column 2, line 41 to page 3, column 2, line 18. Thus, a crosslinker containing an uretdione structure is but one of many listed suitable crosslinking agents. Hartung does not provide a preference or reason for using any particular crosslinker, including the polyisocyanate with uretdione groups, and no particular species of such compounds are provided. Consequently, Hartung provides no apparent reason for choosing the crosslinkers disclosed in either the O'Connor or Gras references, much less an explicit reason to make a crosslinker that conforms to Applicant's claimed uretdione compound.

First, O'Connor does not provide any motivation or apparent reason to include either its prepolymer, which is used only to form the polyurethane oligomer, or its polyurethane oligomer in an aqueous, electrodepositable coating composition. Instead, O'Connor is focused on providing coatings and adhesives for producing particle board. O'Connor col. 5, lines 21-53. The reference is silent as to use or suitability of the either compound within an electrodepositable coating composition and nowhere does O'Connor disclose reacting these compounds with an epoxy resin.

Second, nothing in Gras speaks to the use or suitability of its polyaddition product in an aqueous coating composition. Instead, the Gras teachings are focused on

overcoming problems associated with preparation of powder coatings. Gras col. 1, lines 54-64; and col. 4, lines 12-16. There is no specific benefit or quality found in the Gras reference that a skilled artisan would deem desirable to incorporate into the aqueous coatings of Hartung. Similarly, Gras does not react its polyaddition product with an epoxy resin. Instead, the advantages of Gras are realized in the Gras solvent-less powder coating.

There is no appreciation or motivation found in the combination of references or the general knowledge in the art by which a skilled artisan would include either O'Connor or Gras in the aqueous, electrodepositable coating composition of Hartung to realize the features and benefits of the present invention. This combination exists solely by using Applicant's claims and invention as a roadmap. The rejection based on Hartung and O'Connor or Gras should be REVERSED.

II. The claims 7 are nonobvious and therefore patentable over a combination of Hartung and Gras because no reasonable expectation of success exists upon which to base the proposed modification.

A *prima facie* case of obviousness cannot be based on the combination of Hartung and Gras as there is no reasonable expectation of success; specifically, the Gras polyaddition product, which is used in powder coating compositions, would not necessarily be expected to work in the Hartung aqueous coating composition. Obviousness does not require absolute predictability; however, at least some degree of predictability is required, and evidence showing there was no reasonable expectation of

success may support a conclusion of nonobviousness. *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143, 148 (C.C.P.A. 1976) (stating that there must be a showing of a reasonable expectation of success and the alleged combination cannot be said to be "inherently" successful).

In this case, Gras is directed to powder coating and stoving enamels – two coatings that are very different from aqueous, electrodepositable coatings. While Gras does not expressly teach away from coatings formed of aqueous dispersions, its silence coupled with its priorities in overcoming viscosity and solvent issues to make powder coatings speaks to an entirely different class of coatings compared to Hartung. Gras col. 1, lines 31-35; 43-51; and 58-61. As such, the polyaddition products in Gras are designed to overcome the viscosity issues in formulating powder coatings, which is inapposite to aqueous, electrodepositable coatings.

The suggestion of using crosslinkers having uretidione groups in Hartung is further made in the context of a list of numerous suitable crosslinkers. In surveying crosslinkers having uretdione groups, the skilled artisan would not expect to incorporate the Gras polyaddition products, used in powder coatings, into aqueous coating compositions. Any combination of Hartung with uretdiones would reasonably start with uretdiones used in aqueous, electrodepositable coating compositions, not those listed for a different coating technology, such as the powder coatings of Gras. Moreover, there is nothing provided in Hartung by which a skilled artisan would expect to successfully incorporate an oligomeric, solid uretdione compound in comparison to the more general classes of polyisocyanates and even dimerized and trimerized

polyisocyanates. Hartung paragraph [0044]. Accordingly, the rejection based on Hartung and Gras should be REVERSED.

For all of these reasons discussed above, Applicant respectfully requests that the rejection of Claims 1, 3, 4, 7-9, and 11-13 be REVERSED.

Respectfully submitted,

Dated: May 25, 2007

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Claims Appendix

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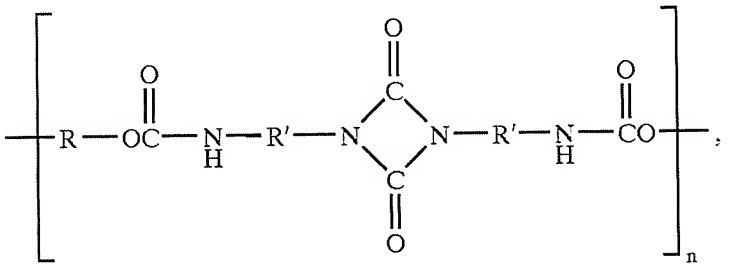
1. An aqueous, electrodepositable coating composition comprising a dispersion of a cathodically electrodepositable, active hydrogen-functional epoxy resin and a uretdione compound, the epoxy resin having a cationic functional group selected from the group consisting of quaternary ammonium, sulfonium and phosphonium, wherein the uretdione compound comprises a structure of:



wherein R is a divalent alkylene radical, R' is a divalent alkylene, cycloalkylene, arylene, or alkylarylene radical, and n is an integer of 1 to about 50.

2. (cancelled)

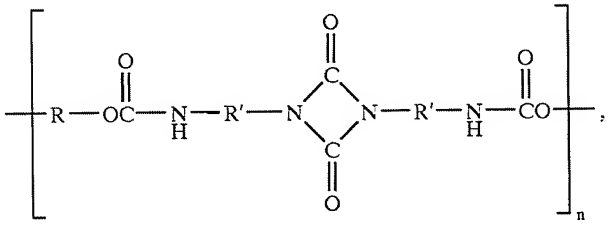
3. An aqueous coating composition according to claim 1, wherein n is a sufficiently large number so that the compound is a solid at room temperature.

4. An aqueous coating composition according to claim 1, wherein the uretdione compound is a uretdione of isophorone diisocyanate.

5-6. (cancelled)

7. A method of making an aqueous dispersion coating, comprising steps of

combining a solid uretdione compound with a molten, water-dispersible epoxy resin, the epoxy resin having a cationic functional group selected from the group consisting of quaternary ammonium, sulfonium and phosphonium, to form a homogenous resin mixture, wherein the uretdione compound comprises a structure of:



wherein R is a divalent alkylene radical, R' is a divalent alkylene, cycloalkylene, arylene, or alkylarylene radical, and n is an integer of 1 to about 50;

salting the water-dispersible resin; and

dispersing the resin mixture in water.

8. A method according to claim 7, wherein the molten, water-dispersible resin has functionality reactive with the uretdione compound.

9. A method according to claim 7, wherein the coating composition contains a further water-dispersible resin having functionality reactive with the uretdione compound.

10. (cancelled)

11. A method of coating a substrate, comprising

applying the coating composition of claim 1 to a substrate and

curing the applied coating composition to produce a cured coating layer on the substrate.

12. A method according to claim 11, wherein the coating composition is applied to the substrate by electrodeposition.

13. The composition of claim 1, wherein the cationic functional group is quarternary phosphonium.

Evidence Appendix

There is no evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132.

Related Proceedings Appendix

There have been no related appeals and interferences and therefore no related decisions exist.